Eden Revisited - Following the Scent of Mueller's 1860 Journey through the Twofold Bay-Genoa District.

D.E. Albrecht[1]

Abstract
Ferdinand von Mueller travelled through the Twofold Bay - Genoa River area (south-eastern New South Wales/ far east Gippsland, Victoria) in September 1860, collecting many plant species, some 20 new to science. Mueller's route is described in detail, and plants collected at the localities visited by Mueller are discussed. A list is provided of species based on types collected by Mueller on this journey. (*The Victorian Naturalist* **113**, (4) 1996, 171-180)

Introduction

In the mid 1980's I was among a small group of botanists who were involved in extensive field work in south-eastern New South Wales and far east Gippsland. My surprise at finding a number of undescribed taxa and disjunct populations raised a number of questions about the history of collecting in the region. Had collectors simply missed some of the particularly interesting areas or was the area poorly collected generally? Not surprisingly, Baron Ferdinand von Mueller is a prominent figure in the history of botanical exploration in the region. Allan Cunningham had collected specimens from the coastal vegetation of Twofold Bay (centred on present day Eden) as early as 1818, but Mueller was the first botanist to penetrate the hinterland of this region.

On his journey through the region, which lasted for most of September 1860, Mueller travelled some 300 miles and collected in excess of 250 taxa. Regrettably there is no surviving journal of his expedition and it is only in the official government reports that Mueller mentions the course of his journey. The most informative account is found in his *Annual Report of the Government Botanist* ... for 1860-61:

'During the month of September I was engaged in elucidating the vegetation along the south eastern frontiers of the colony, crossing the country from Twofold Bay to the Genoa, along which river I travelled to the coast, deviating to Cape Howe and to the adjoining freshwater lake, and ascended again the Genoa River to near its sources, examining the adjacent elevated country and the Nungatta mountains on my way ...' (Mueller 1861).

The late Norman Wakefield published three articles (Wakefield 1952; 1958; 1969) that mention, albeit briefly, aspects of Mueller's September 1860 expedition. This contribution, in the form of a potted chronology, aims to supplement Wakefield's work, particularly with regard to Mueller's route, collecting localities and the significance of the expedition.

The locality data accompanying Mueller's specimens, though often very imprecise, are a major source of information for establishing his route (Fig. 1). Many of the specimens collected on the expedition are housed at the National Herbarium of Victoria (MEL); a number are also cited in *Flora Australiensis* (Bentham 1863-1878). The task of finding all specimens from the expedition in MEL and extracting the locality data accompanying each specimen is physically an enormous task. I began this task, searching at least those species known to have a restricted distribution in the region, but finally became frustrated by the enormity of the undertaking. When all of the collections at MEL are finally databased, which at current projections may take well over a decade, we may be in a position to conclude with more certainty the finer details of his route. Fig. 2 shows the localities discussed in the following text. An annotated list of type collections made on the expedition is presented in Appendix 1.

[1]Northern Territory Herbarium, Parks and Wildlife Commission of the Northern Territory, P.O. Box 1046, Alice Springs, N.T. 0871, Australia.

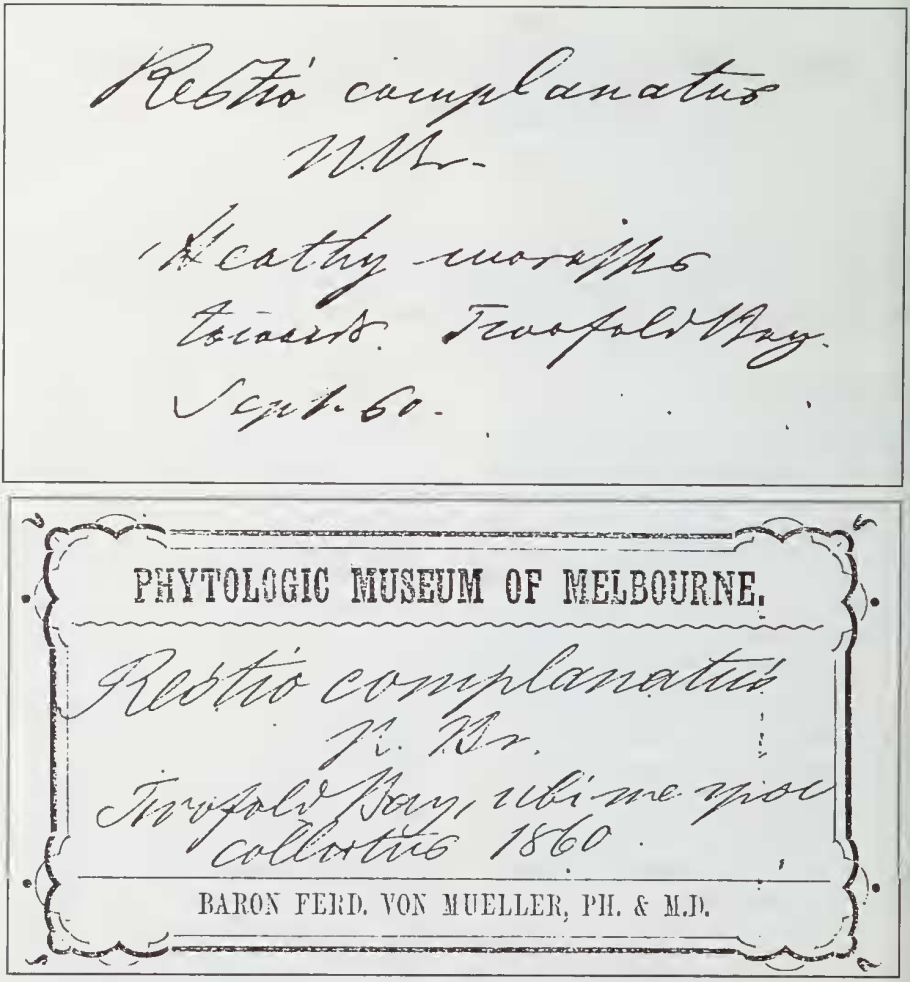

Fig. 1. Two kinds of labels commonly accompanying Mueller's September 1860 specimens. Labels are in Mueller's hand.

A preliminary list of taxa collected during the journey is housed in the library of the National Herbarium of Victoria. Nomenclature follows Ross (1993) and Harden (1990-1993)

The expedition

Mueller departed from Melbourne on the 6th September 1860 on the steam ship *Rangatira*, arriving at Snug Cove, Twofold Bay the following day. His arrival was noted in the local tabloid newspaper *The Twofold Bay and Maneroo Telegraph* on the 11th of September: 'An old friend, andthe friend of science and mankind Dr. Mueller, the curator of the Botanical Gardens in Melbourne, arrived here on Saturday (7th) last in the Rangatira, and on Sunday (8th) morning left this town on an expedition overland to the west of Cape Howe. Unlike the crowd of people who are rushing in the face of commerce, his persuit is amidst the regions of science. His object is to procure the best botanical knowledge of this unexplored district.'

When Mueller arrived at Eden the town was prospering. Gold was discovered at Kiandra in November, 1859 and hundreds of prospectors came by sea, disembarking at Eden and making their way westwards

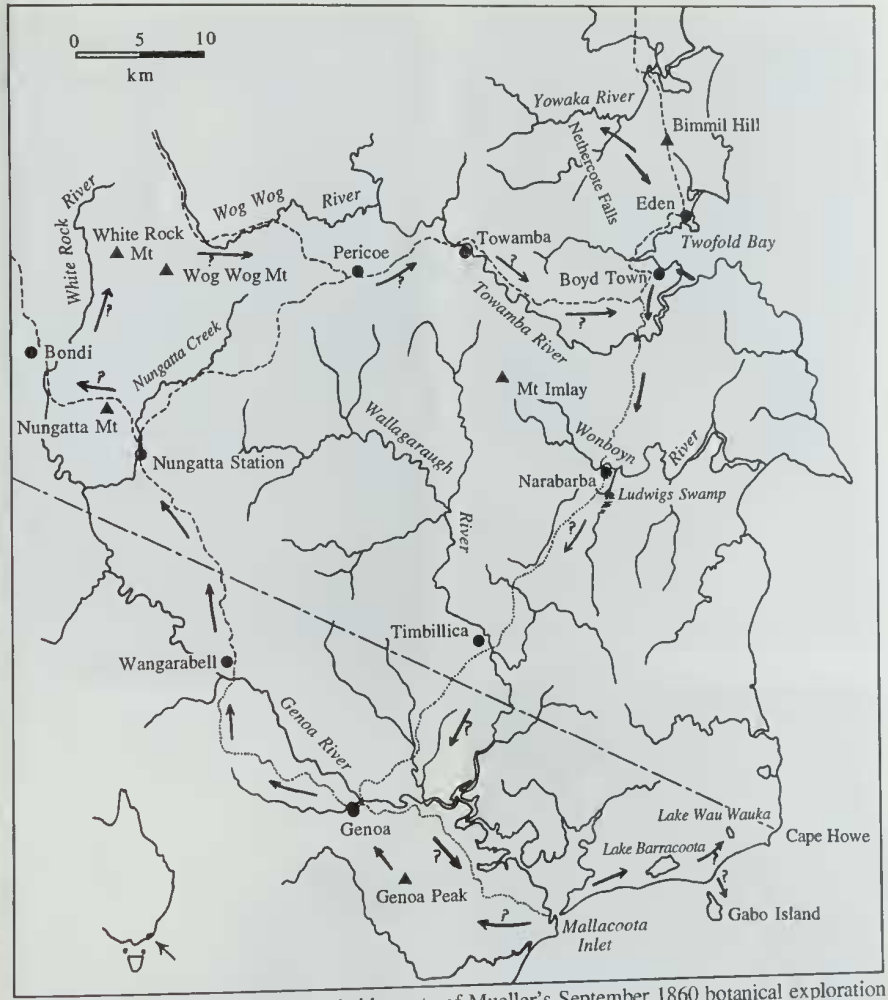

Fig. 2. Collecting localities and probable route of Mueller's September 1860 botanical exploration of the Twofold Bay-Genoa district. Dashed line: tracks as shown on maps c. 1860. Dotted line: presence of track probable but route not accurate. Arrows: probable route of Meuller. ?: route uncertain

to the goldfields. In a letter to William Hooker (Royal Botanic Gardens, Kew) from the Genoa River on the 17th September 1860 (Hooker 1860 *unpub.*), Mueller indicated that from Eden he proceeded southward towards the Genoa River.

A considerable proportion of Mueller's collections from the expedition were gathered in the vicinity of Twofold Bay. On the coastal dunes, sedimentary coastal cliffs and adjoining headlands of Twofold Bay he collected characteristic species such as *Alyxia buxifolia*, *Senecio lautus*, *Zieria cytisoides*, *Apium prostratum*, *Westringea fruiticosa* and *Banksia integrifolia* (Fig. 3). In the near-coastal ridge forest he collected common species such as *Eucalyptus gummifera*, *E. sieberi*, *E. longifolia*, *Patersonia sericea*, *Leptomeria acida*, *Pultenaea daphnoides*, *Platylobium formosum* and *Pimelea linifolia*.

The views from the higher ridges near Eden would have enabled Mueller to

survey the country to the south. From this vantage point Mt Imlay is a prominent landmark, and one we would expect to have been alluring to Mueller. Although several of his collections are labelled Mt Imlay, they are all relatively widespread species that were probably gathered on the lower slopes of the mountain or further east. The species with restricted distributions known to occur in the vicinity of the summit, namely *Eucalyptus imlayensis*, *Hibbertia saligna*, *Eriostemon virgatus*, *Prostanthera walteri*, *Tetratheca subaphylla* and *Persoonia brevifolia* were not collected by Mueller and it is unlikely that he explored the summit of this interesting mountain.

The two Mt Imlay collections of *Elaeocarpus holopetalus*, a species restricted to sheltered gully heads towards the summit of the mountain (Fig. 4), are somewhat confusing, as both Mueller's and Lockhart Morton's name appear on the labels, which are undated. As Mueller described this species in 1861 and did not cite a specimen from Mt Imlay, one assumes that the material was not collected by Mueller as he did not revisit the area subsequent to his 1860 trip. Morton collected *Oxylobium ellipticum*, *Hibbertia saligna* and *Actinotus helianthi* from the summit of Mt Imlay and it seems logical to suppose that he also collected *Elaeocarpus holopetalus* sometime after 1861. Morton collected several other interesting taxa near Twofold Bay, namely *Pomaderris brogoensis* and *Boronia anemonifolia* var. *variablis*. Unfortunatcly no dates are given on his labels. Mueller sent Morton's Twofold Bay-Mt Imlay collections to Bentham and they appear in his *Flora Australiensis*, volume 4 onwards. Morton's collections of taxa treated in volume 3 (published in Jan. 1867) are not cited, and assuming they would have been cited by Bentham had he examined them, it is probable that Morton visited the area sometime between the publication of volumes 3 and 4. A Mr Morton is listed in the *Argus* dated April 23rd 1867 as arriving in Melbourne on the steamship *City of Melbourne* from Sydney (via Twofold Bay). This date corresponds with the phenological state of his specimens, however, in the absence of a christian name the evidence is not conclusive (Fig. 5).

As Mueller progressed southwards he collected in several vegetation communities between the Towamba and Womboyn Rivers. In the dry sclerophyll woodlands dominated by *Eucalyptus sieberi* he collected a number of heathy understorey plants including *Poranthera corymbosa*, *Phebalium diosmeum*, *Xanthosia pilosa*,

Fig. 3. *Senecio lautus* in full bloom on the rocky coastline surrounding Twofold Bay.

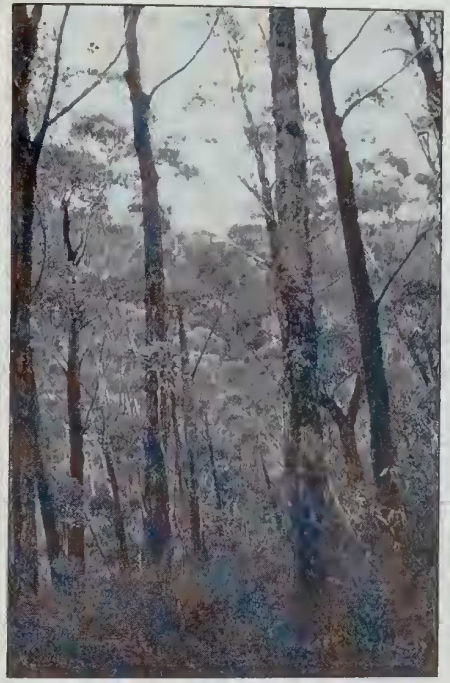

Fig. 4 View into a patch of cool temperate rainforest below the summit of Mt Imlay. It is here that Morton collected specimens of *Elaeocarpus holopetalus*.

Platysace lanceolata, *Hakea dactyloides*, *Coopernookia barbata* and *Bossiaea heterophylla* (Fig. 6). It is difficult to pinpoint from his collections exactly where they were gathered as most species are widely distributed. Similarly it is difficult to pinpoint where he collected species such as *Gymnoschoenus sphaerocephalus*, *Schoenus lepidosperma*, *Restio complanatus*, *Baeckea linifolia* and *Pultenaea paludosa*, as they are all characteristic species of the lowland swamps in this vicinity (Fig. 7). The label accompanying *Pultenaea paludosa* reads 'moory heaths near the Womboyn', which suggests that he may have collected near Ludwigs Swamp.

Mueller made several collections from 'granite rocks on the Womboyn'. Although there is no granite on the Womboyn River, the river passes through an area of rhyolite to the east of Narabarba, and it is probable that Mueller included rhyolite in his concept of granite.

Fig. 5. Portrait of W. Lockhart Morton. He collected specimens from Twofold Bay and Mt Imlay c. 1867.

Fig. 6. Understorey vegetation in forests dominated by Eucalyptus sieberi between the Towamba and Womboyn Rivers

His collections of *Dodonaea triquetra*, *Crowea exalata*, *Schoenus imberbis*, *Chrysocephalum baxteri* and *Pseudanthus divaricatissimus* are likely to have come from the shrubland that occurs on the more exposed rhyolite. It is perhaps surprising that Mueller did not collect the endemic *Acacia constablei* that grows in the vicinity.

Mueller's route from the Womboyn River to the Genoa River is uncertain and, to date, specimens have not provided any clarification. There are conflicting stories

Fig. 7. Lowland swamp vegetation south of the Towamba River.

regarding the existence of a track between the Towamba and Genoa Rivers. Similarly it is debatable whether a track existed between Timbillica and Mallacoota (which at that time was situated on the north side of the Genoa River). According to C. Allen (*pers. comm.*) and Alan Piesley (*pers. comm.*), both descendants of early settlers in the region, the open forest vegetation was lightly stocked with trees and had an open understorey, which made travel by horse feasible in the absence of a track. Unfortunately this section of his journey remains a mystery. At Mallacoota Inlet he collected a suite of specimens including *Correa alba*, *Phylloglossum drummondii* and *Spyridium cinereum*.

Travelling north from the mouth of the Genoa River Mueller collected *Chorizandra australis* from the fresh water lake near Cape Howe. Whether he was referring to Lake Barracoota or Lake Wau Wauka is at present uncertain. The vegetation through this area is dense and it is likely that he travelled principally on the consolidated beach sands. Wakefield (1969) mentioned two of Mueller's specimens from 'abreast Gabo', namely *Conospermum taxifolium* and *Helichrysum elatum*. Apparently there was sporadic access to the island by means of a sand bar. The only collection made by Mueller from Gabo Island cited in *Flora Australiensis* is referred to *Pterostylis mutica*. This collection is not housed at MEL and it would be worth searching further herbaria to ascertain whether the *Pterostylis* specimen is correctly attributed to Mueller. The specimen may have been collected by Maplestone, who made a number of collections on Gabo Island in 1861. Although Mueller claims to have visited Cape Howe I have yet to encounter a specimen supporting this claim.

Returning to the northern side of Mallacoota Inlet, Mueller may have crossed to the southern side of the Genoa River by boat, which means of transport was apparently much used in that location at the time. Alternatively he may have forded the Genoa River upstream of Mallacoota Inlet at Goodwin Sands and the Narrows. Once on the southern side of the Genoa River, he probably followed a horse track towards Genoa. Wakefield (1969) mentioned that the Genoa-Mallacoota track passed over the shoulder of Genoa Peak. However, I been unable to determine the exact alignment of this track. Mueller probably deviated from the track to the summit of Genoa Peak (Fig. 8) where he collected *Dendrobium striolatum*, *Lycopodium varium*, *Pomaderris lanigera*, *Dodonaea triquetra*, *Prostanthera hirtula* var. *angustifolia* and several other species.

From Genoa Peak he returned to Genoa and ascended the Genoa River valley along the Old Wangarabell track. Mueller collected a considerable number of specimens labelled 'Genoa River'. Wakefield (1969) suggested that many of the collections thus labelled were collected about the mouth of the granitic gorge about two miles upstream from the present township of Genoa, at the point where the Old Wangarabell track swung westerly away from the river. Many of these species were probably also collected near Wangarabell, where the track crossed the Genoa River (Fig. 9). It was either at Wangarabell or further along the Wangarabell track at Nungatta Station that Mueller commenced a letter to William Hooker. This was dated the 17th September, only nine days after setting out from Eden.

From Wangarabell Mueller travelled north to Nungatta Station homestead (Fig. 10), at that time occupied by Alexander Weatherhead. The original description of *Telopea oreades* indicated that Mueller was accompanied in the field by Weatherhead when the type collection was gathered. In his letter to Hooker, Mueller referred the Nungatta populations to the

Fig. 8. The view from Genoa Peak over the Howe Range, lower Genoa River, Mallacoota Inlet and Gabo Island.

Tasmanian *Telopea truncata*, but at that time he had not seen good flowering material. Mueller collected in the riparian environments of Nungatta and Nina creeks (on the east side of Nungatta Mountain) where he discovered *Elaeocarpus holopetalus* in cool temperate rainforest. Other species collected in this environment were *Scutellaria mollis* and *Adiantum hispidulum*. The locality data on his specimens of *Persoonia brevifolia* reads 'common on the summit of Nungatta Mountains and White Rock Mountain' and 'granite declivities of the upper Genoa River'. A brief search for this species around the sandstone summit of Nungatta Mountain was unsuccessful. Doug Binns (*pers comm.*) has also looked on the Nungatta Range without success. It is probable that Mueller's specimens were all gathered on the granite outcrops on White Rock Mountain.

From Nungatta Mueller travelled north to White Rock Mountain. His specimen locality data are vague for this tract of country and it is presently uncertain whether his route was via Bondi homestead. Localities mentioned on specimen labels typically read 'sources of the Genoa River' or 'upper Genoa River'. A collection of *Eucalyptus stellulata* has such a label. This species presently occurs in the vicinity of the old Nungatta-Bondi track, just south of the former Bondi homestead. I have not observed *E. stellulata* growing further east and, although it is tempting to argue that this evidence indicates that he would have visited Bondi homestead, the species may have occurred further east on Nungatta Station prior to extensive clearing.

On the summit of White Rock Mountain Mueller collected *Epacris robusta* (Fig. 11), *Oxylobium arborescens*, *Persoonia confertifolia*, *P. silvatica*, *P. brevifolia*, *Eucalyptus sieberi*, *Kunzea ericoides* and *Tetratheca subaphylla*. The Nalbaugh plateau between White Rock Mountain and Wog Wog Mountain to the east supports a number of species with regionally restricted distributions. Several of these species, such as *Acacia costiniana*, occur

Fig. 9. Riparian vegetation on the Genoa River near Wangarabell.

Fig. 10. The original 'Nungatta' (or 'Nangutta') homestead. Mueller is likely to have spent at least one night here.

quite abundantly on the plateau, and one would assume that Mueller would have collected these species had he crossed Nalbaugh Plateau.

The route by which he returned to Eden is uncertain. It seems logical that he would have proceeded from White Rock Mountain eastward to Pericoe via the track that follows the upper part of the Wog Wog River. From Pericoe the track would be followed to Towamba, Boyd Town and finally Eden. This was a well established route. Unfortunately the only specimens that perhaps support at least part of this route are those he gathered on the Towamba River viz *Dodonaea truncatiales*, *Melaleuca armillaris*, *Pomaderris intermedia* and *Westringea eremicola*. However, these species may have been collected when he first crossed the Towamba River on the way southwards towards the Genoa River.

Prior to sailing for Melbourne, Mueller collected to the north of Eden. In the moist, sheltered gullies around Bimmil Hill he collected warm temperate rainforest species including *Acmena smithii*, *Pittosporum undulatum*, *Ficus coronata*, *Marsdenia rostrata*, *Rapanea howitiana*, *Cissus hypoglauca*, *Pteris umbrosa* and a host of other species. It was probably here that he discovered *Prostanthera incisa* var. *pubescens* and *Polyscias murrayi*. The latter species was named in honour of Patrick Murray, the chief magistrate of the district, who apparently assisted Mueller with some of the logistic aspects of the expedition. This aid was doubtlessly in the form of 'local' knowledge regarding tracks, accommodation and assistance in procuring horses for his expedition.

Fig. 11. *Epacris robusta* growing in shrubland on large granite expanses near the summit of White Rock Mountain.

Mueller also collected specimens from the Yowaka River, probably near, or downstream of, Nethercote Falls. The geology here is rhyolite and a characteristic scrub or shrubland develops on areas of exposed rock (Fig. 12). *Phebalium ralstonii*, *Lasiopetalum ferrugineum*, *Muehlenbeckia rhyticaryia*, *Crowea exalata*, *Pseudanthus divaricatissimus*, *Rulingia dasyphylla*, *Hibbertia monogyna* and *Dodonaea truncatiales* are all characteristic species of this vegetation type that he collected. Rhyolite shrubland occurs in scattered patches further west than Nethercote Falls but, in considering the species Mueller collected and did not collect, it is likely that he travelled no further west than approximately Nethercote Falls.

Mueller returned to Eden and boarded the steam ship *Wonga Wonga* on the 30th of September. His arrival at Hobsons Bay, Melbourne was reported in the *Argus* on the 2nd October 1860.

Conclusion

Mueller's expedition was the first significant botanical collecting trip within the south-eastern New South Wales-far east Gippsland region. He collected a respectable number of specimens (currently estimated to be about 20% of the known flora of the region) and discovered about 20 species previously unknown to science. His collections provided useful material for his work on the flora of Victoria and were used extensively by Bentham during his preparation of *Flora Australiensis*.

Considering the short duration of the expedition and the considerable distance traversed, Mueller managed to sample from a surprisingly large percentage of the habitats present in the region. He collected in a number of botanical 'hot spots' and came remarkably close to several others (e.g. Mt Imlay summit and Nalbaugh plateau). No doubt it was with considerable reluctance that he had to pass by some of these interesting-looking sites. The gratification of future generations of botanists was probably the last thing on this mind when deciding whether to botanise a particular area.

Fig. 12. Shrubland on rhyolite outcropping near the Yowaka River. *Acacia subtilinervis* (dominant) and *Phebalium ralstonii* were discovered by Mueller in this area.

Acknowledgments

The following are sincerely thanked for their help, particularly with historical information and distribution data - Ed Mitchell, Tom May, Margaret Parris, David Keith, Doug Binns, Carole Helman, Phil Gilmour, C. Allen and Alan Piesley, along with staff of the State Library of Victoria, and the library, Royal Botanic Gardens, Melbourne.

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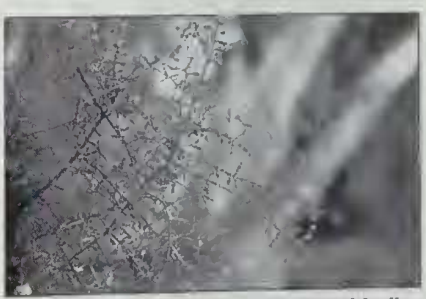

Fig. 13. *Pseudanthus divaricatissimus.* Mueller collected this along the Womboyn and Yowaka Rivers.

Appendix 1
List of TYPES collected by Mueller in the Twofold Bay-Genoa District, September 1860.

1.Taxa described by Mueller

Acacia subtilinervis F.Muell., *Pl. Victoria* 2: 32 (1863). Type: On granite declivities around Mt Imlay. *A. subtilinervis* has never been relocated on Mt Imlay despite quite extensive searching. The geology of Mt Imlay is of sedimentary origin and likely *A. subtilinervis* habitat appears to be absent on Mt Imlay. The nearest known populations to Mt Imlay occur in the vicinity of the Yowaka River near Nethercote, an area collected over by Mueller. The geology of this area has been mapped as rhyolite, which appears to have included within Mueller's concept of granite. Unless *A. subtilinervis* is discovered closer to Mt Imlay, the Yowaka River should be considered the type locality of this species.

Dodonaea truncatiales F.Muell., *Fragm.* 2: 143 (1861). Syntypes: In wooded valleys and gravelly banks of the Towamba, Yowaka and Genoa Rivers.

Elaeocarpus holopetalus F.Muell., *Fragm.* 2: 143 (1861). Syntypes: In wooded valleys of the Nungatta Mountains and headwaters of Nina Creek.

Eriostemon ralstonii F.Muell., *Fragm.* 2: 101 (1861). Type: On granite rocks against the Yowaka River, towards Twofold Bay. Current name: *Phebalium ralstonii* (F.Muell.) Benth., *Fl. Austral.* 1: 339 (1863)

Ionidium vernonii F.Muell., *Pl. Victoria* 1: 223 (1862). Syntypes: On barren plains and ridges near the Genoa River; also near Twofold Bay. Current name: *Hybanthus vernonii* (F.Muell.) F.Muell., *Fragm.* 10: 81 (1871)

Panax murrayi F.Muell., *Fragm.* 2: 106 (1861). Type: In valleys of wooded ranges towards Twofold Bay. Current name: *Polyscias murrayi* (F.Muell.) Harms, *Nat. Pflanzenfam.* 3(8): 47 (1898).

Telopea oreades F.Muell., *Fragm.* 2: 170 (1861). Type: Towards the headwaters of Nungatta Creek in the alpine tract behind the Nungatta Mountains. Weatherhead and Mueller.

Tetratheca ericifolia var. *aphylla* F.Muell., *Pl. Victoria* 1: 183 (1862). Syntypes: Granite rocks at the White Rock Hill, 3000'; sources of the Genoa River. Current name: *T. subaphylla* Benth., *Fl. Austral.* 1: 132 (1863)

2.Taxa described by botanists other than Mueller

Correa lawrenciana var. *genoensis* Paul G.Wilson, *Trans. Roy. Soc. South Australia* 85: 50 (1961). Type: Flooded banks of the lower Genoa River.

Epacris robusta Benth., *Fl. Austral.* 4: 237 (1868). Type: Granite rocks at the summit of White Peak Mountain, at the head of the Genoa River.

Grevillea victoriae var. *leptoneura* Benth., *Fl. Austral.* 5: 468 (1870). Type: Sources of the Genoa River.

Isopogon anemonifolius var. *tenuifolius* F.Muell. ex Benth., *Fl. Austral.* 5: 347 (1870). Type: Twofold Bay. Current name: *I. prostratus* McGill., *Telopea* 1: 32 (1975)

Persoonia myrtilloides var. *brevifolia* Benth., *Flora Austral.* 5: 401 (1870). Syntypes: Upper Genoa River; Nungatta Mountains. Current name: *P. brevifolia* (Benth.) L.A.S.Johnson & P.H.Weston, *Telopea* 4: 275 (1991).

Pomaderris cinerea Benth., *Fl. Austral.* 1: 420 (1863). Type: Mt Imlay, Twofold Bay.

Prostanthera hirtula var. *angustifolia* Benth., *Fl. Austral.* 5: 97 (1870). Type: Genoa Peak.

Prostanthera incisa var. *pubescens* F.Muell. ex Benth., *Fl. Austral.* 5: 96 (1870). Type: Forest rivulets near Twofold Bay.

Pseudanthus divaricatissimus var. *orbiculare* Benth., *Fl. Austral.* 6: 60 (1873). Syntype: Granite rocks on the Yowaka River.

Pultenaea altissima F.Muell. ex Benth., *Fl. Austral.* 2: 123 (1864). Syntypes: Genoa River; Twofold Bay and Genoa River.

Pultenaea benthamii var. *elatior* F.Muell. ex Benth., *Fl. Austral.* 2: 114 (1864). Syntype: Yowaka River.

Pultenaea viscosa R.Br. ex Benth., *Fl. Austral.* 2: 127 (1864). Syntype: Womboyn Range.